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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

LY, ANH

ART UNIT PAPER NUMBER

2162

DATE MAILED: 04/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/923,498

Applicant(s)

SAH ET AL.

Examiner

Anh Ly

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 December 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-54 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-54 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 May 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☒ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. This Office Action is response to Applicants' communications filed on 12/06/2004.
2. Claims 1-54 are pending in this application.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,918,225 issued to White et al. (hereinafter White) in view of Pub. No. US: 2004/0095608 A1 of Walmsley et al. (hereinafter Walmsley).

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With respect to claim 1, White teaches parsing the table data into columns of values each column represented as a continuous strip of data in a temporary storage (parser is used for parsing the database table data into storing data vertically, column-wise storage or vertical partitioning: abstract, col. 3, lines 45-47; also see figs 2, item 261, 3A-C, col. 12, lines 38-67 and col. 13, lines 1-55) and a temporary table is implemented for storing the data: col. 51, lines 3-38);

formatting each column into a data stream for permanent storage (storing data in column-wise basis in storage device of the system: col. 10, lines 42-54, col. 12, lines 65-67 and col. 13, lines 1-40; data page in a contiguous fashion or data stream where columns of values or data or records are contained and chain of columns representing a particular database table: abstract, lines 12-13, col. 3, lines 30-47 and lines 65-67 and col. 4, lines 1-27); and

directing a storage device to store each data stream as a continuous strip of compressed data without regard to a page size for the storage device (data stream is in contiguous format, a chain of columns of data are storing on a column basis by cell as a solid stream of data and column data is stored as a chain of column data in the storage device and the data would be compressed before storing on the storage device: col. 3, lines 30-47 and col. 4, lines 28-44, col. 13, lines 40-67 and col. 14, lines 1-45, see figs. 4A-D).

White teaches using parser for paring table data into columns of values storing in the temporary table and the data column is compressed before storing in the storage

device of the system. White does not explicitly teach a continuous strip of compressed without regard to page size for the storage device.

However, Walmsley teaches compressed data to be stored in a memory buffer without taking into account the design of memory system (sections 0073, 0052-0058 and abstract).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teachings of White with the teachings of Walmsley, wherein the columns of values or compressed column data are to be stored on the memory/storage device in the database server system provided therein (White's figs 1A, item 109 and 2, item 240), would incorporate the use of memory buffer to store the compressed data, in the same conventional manner as described by Walmsley (sections 0052-0058). The motivation being to improve database query performance and to reduce the data storage.

With respect to claim 2, White teaches partitioning each column into groups of values based on a primary key for the table data (see figs 3B-3C and 4B; col. 14, lines 31-44) and formatting each group of values into a data stream (col. 4, lines 15-18).

With respect to claim 3, White discloses wherein formatting each column comprises compressing the values in the column (col. 3, lines 42-47 and col. 4, lines 18-37).

With respect to claim 4, White discloses creating a code for each value in the column and replacing each value with the corresponding code (code generator: col. 8, lines 18-40).

With respect to claim 5, White discloses creating a plurality of entries, one entry for each value in the column; and deriving the code from a location for the corresponding entry within the plurality of entries (col. 23, lines 32-62, col. 24, lines 18-67 and col. 25, lines 1-3).

With respect to claim 6, White discloses determining a number of occurrences of each value in the column; and deriving the code for each value from the corresponding number of occurrences (Group-By clause: col. 3, lines 25-37 and col. 11, lines 32-40).

With respect to claim 7, White discloses creating a plurality of entries, one entry for each value in the column, storing a number of occurrences of each value in the column in the corresponding entry and deriving the code for each value from the corresponding number of occurrences (col. 3, lines 25-37 and col. 11, lines 32-40).

With respect to claim 8, White discloses directing the storage device to store the plurality of entries in conjunction with the corresponding continuous strip of data (stream of data in data page being contiguous format: col. 3, lines 65-67 and col. 4, lines 1-18; also see col. 10, lines 18-42).

With respect to claim 9, White discloses directing the storage device to store the plurality of entries in a header for the corresponding continuous strip of data (page header: col. 13, lines 25-55).

With respect to claim 10, White discloses encoding the codes in the column according to an encoding table (compression technique is applied to all columns of data in the table: col. 4, lines 18-26).

With respect to claim 11, White discloses formatting multiple columns into a single data stream (columns of data are storing data in a column-wise basis on the data page: col. 12, lines 37-50; also see abstract).

With respect to claim 12, White discloses linearly concatenating a series of rows, each row comprising one value from each of the multiple columns (columns of data are contained in data pages, see fig. 3C: col. 13, lines 56-67 and col. 14, lines 1-2; also see col. 11, lines 28-47).

With respect to claim 13, White discloses linearly concatenating the multiple columns (col. 11, lines 28-47).

Claim 14 is essentially the same as claim 1 except that it is directed to a computer readable medium rather than a method, and is rejected for the same reason as applied to the claim 1 hereinabove.

Claim 15 is essentially the same as claim 2 except that it is directed to a computer readable medium rather than a method, and is rejected for the same reason as applied to the claim 2 hereinabove.

Claim 16 is essentially the same as claim 3 except that it is directed to a computer readable medium rather than a method, and is rejected for the same reason as applied to the claim 3 hereinabove.

Claim 17 is essentially the same as claim 4 except that it is directed to a computer readable medium rather than a method, and is rejected for the same reason as applied to the claim 4 hereinabove.

Claim 18 is essentially the same as claim 5 except that it is directed to a computer readable medium rather than a method, and is rejected for the same reason as applied to the claim 5 hereinabove.

Claim 19 is essentially the same as claim 6 except that it is directed to a computer readable medium rather than a method, and is rejected for the same reason as applied to the claim 6 hereinabove.

Claim 20 is essentially the same as claim 7 except that it is directed to a computer readable medium rather than a method, and is rejected for the same reason as applied to the claim 7 hereinabove.

Claim 21 is essentially the same as claim 8 except that it is directed to a computer readable medium rather than a method, and is rejected for the same reason as applied to the claim 8 hereinabove.

Claim 22 is essentially the same as claim 9 except that it is directed to a computer readable medium rather than a method, and is rejected for the same reason as applied to the claim 9 hereinabove.

Claim 23 is essentially the same as claim 10 except that it is directed to a computer readable medium rather than a method, and is rejected for the same reason as applied to the claim 10 hereinabove.

Claim 24 is essentially the same as claim 11 except that it is directed to a computer readable medium rather than a method, and is rejected for the same reason as applied to the claim 11 hereinabove.

Claim 25 is essentially the same as claim 12 except that it is directed to a computer readable medium rather than a method, and is rejected for the same reason as applied to the claim 12 hereinabove.

Claim 26 is essentially the same as claim 13 except that it is directed to a computer readable medium rather than a method, and is rejected for the same reason as applied to the claim 13 hereinabove.

Claim 27 is essentially the same as claim 1 except that it is directed to a computer system rather than a method (see fig. 1A of the computer system 100, system bus, storage device and cache memory: col. 5, lines 28-46), and is rejected for the same reason as applied to the claim 1 hereinabove.

Claim 28 is essentially the same as claim 2 except that it is directed to a computer system rather than a method, and is rejected for the same reason as applied to the claim 2 hereinabove.

Claim 29 is essentially the same as claim 3 except that it is directed to a computer system rather than a method, and is rejected for the same reason as applied to the claim 3 hereinabove.

Claim 30 is essentially the same as claim 4 except that it is directed to a computer readable medium rather than a method, and is rejected for the same reason as applied to the claim 4 hereinabove.

Claim 31 is essentially the same as claim 5 except that it is directed to a computer system rather than a method, and is rejected for the same reason as applied to the claim 5 hereinabove.

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Claim 32 is essentially the same as claim 6 except that it is directed to a computer system rather than a method, and is rejected for the same reason as applied to the claim 6 hereinabove.

Claim 33 is essentially the same as claim 7 except that it is directed to a computer system rather than a method, and is rejected for the same reason as applied to the claim 7 hereinabove.

Claim 34 is essentially the same as claim 8 except that it is directed to a computer system rather than a method, and is rejected for the same reason as applied to the claim 8 hereinabove.

Claim 35 is essentially the same as claim 9 except that it is directed to a computer system rather than a method, and is rejected for the same reason as applied to the claim 9 hereinabove.

Claim 36 is essentially the same as claim 10 except that it is directed to a computer system rather than a method, and is rejected for the same reason as applied to the claim 10 hereinabove.

Claim 37 is essentially the same as claim 11 except that it is directed to a computer system rather than a method, and is rejected for the same reason as applied to the claim 11 hereinabove.

Claim 38 is essentially the same as claim 12 except that it is directed to a computer system rather than a method, and is rejected for the same reason as applied to the claim 12 hereinabove.

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Claim 39 is essentially the same as claim 13 except that it is directed to a computer system rather than a method, and is rejected for the same reason as applied to the claim 13 hereinabove.

Claim 40 is essentially the same as claim 1 except that it is directed to a data storing system rather than a method (client computer as computer nodes in the client/server computer networked system: see abstract, and col. 6, lines 2-17 and see fig. 1A of the computer system 100, system bus, storage device and cache memory: col. 5, lines 28-46), and is rejected for the same reason as applied to the claim 1 hereinabove.

Claim 41 is essentially the same as claim 2 except that it is directed to a data storing system rather than a method, and is rejected for the same reason as applied to the claim 2 hereinabove.

Claim 42 is essentially the same as claim 3 except that it is directed to a data storing system rather than a method, and is rejected for the same reason as applied to the claim 3 hereinabove.

Claim 43 is essentially the same as claim 4 except that it is directed to a data storing system rather than a method, and is rejected for the same reason as applied to the claim 4 hereinabove.

Claim 44 is essentially the same as claim 7 except that it is directed to a data storing system rather than a method, and is rejected for the same reason as applied to the claim 7 hereinabove.

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Claim 45 is essentially the same as claim 8 except that it is directed to a data storing system rather than a method, and is rejected for the same reason as applied to the claim 8 hereinabove.

Claim 46 is essentially the same as claim 9 except that it is directed to a data storing system rather than a method, and is rejected for the same reason as applied to the claim 9 hereinabove.

Claim 47 is essentially the same as claim 10 except that it is directed to a data storing system rather than a method, and is rejected for the same reason as applied to the claim 10 hereinabove.

Claim 48 is essentially the same as claim 11 except that it is directed to a data storing system rather than a method, and is rejected for the same reason as applied to the claim 11 hereinabove.

Claim 49 is essentially the same as claim 12 except that it is directed to a data storing system rather than a method, and is rejected for the same reason as applied to the claim 12 hereinabove.

Claim 50 is essentially the same as claim 13 except that it is directed to a data storing system rather than a method, and is rejected for the same reason as applied to the claim 13 hereinabove.

With respect to claim 51, White discloses wherein one of the plurality of compute nodes acts as a master to receive the table data from the data source and to transfer the table data and instructions for storing the table data to the other compute nodes (col. 7, lines 46-65, 1 col. 11, lines 4-26, col. 47, lines 28-67 and col. 48, lines 1-40).

With respect to claim 52, White discloses a header field containing data representing an identifier for a column of values from a table; and a plurality of data fields containing data representing the values in the column identified by the header field, the plurality of data fields forming a continuous stream of compressed data for storing across page boundaries (client computer nodes are receiving data from one or more database tables: col. 7, lines 18-35, see fig. 1A and fig. 1B, col. 5, lines 58-67 and col. 6, lines 1-28, transferring data from storage to memory and the data source is data pages; see figs. 3A-3C, page header: col. 13, lines 22-67 and col. 14, lines 1-2; and the columns of data are stored in data pages, which forms a single page chain and each data page includes a page pointer for referencing the next data page the page chain: col. 13, lines 30-67; also see abstract lines 12-13, col. 3, lines 60-64 and col. 4, lines 2-18; see figs. 4A-4D).

White teaches using parser for paring table data into columns of values storing in the temporary table and the data column is compressed before storing in the storage device of the system. White does not explicitly teach a continuous strip of compressed without regard to page size for the storage device.

However, Walmsley teaches compressed data to be stored in a memory buffer without taking into account the design of memory system (sections 0073, 0052-0058 and abstract).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teachings of White with the teachings of Walmsley, wherein the columns of values or compressed column data are to be

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stored on the memory/storage device in the database server system provided therein (White's figs 1A, item 109 and 2, item 240), would incorporate the use of memory buffer to store the compressed data, in the same conventional manner as described by Walmsley (sections 0052-0058). The motivation being to improve database query performance and to reduce the data storage.

With respect to claim 53, White discloses a plurality of dictionary entries containing data representing each value in the column and data representing a count of the occurrences of the corresponding value in the column identified by the header field, wherein the data in the plurality of data fields are codes derived from the counts of the occurrences of the corresponding values (see figs. 3A-3C, page header: col. 13, lines 22-67 and col. 14, lines 1-2; and the columns of data are stored in data pages, which forms a single page chain and each data page includes a page pointer for referencing the next data page the page chain: col. 13, lines 30-67; also see abstract lines 12-13, col. 3, lines 60-64 and col. 4, lines 2-18; see figs. 4A-4D).

With respect to claim 54, White discloses wherein the header field further contains data representing the plurality of dictionary entries (col. 13, lines 22-55).

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Contact Information


6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anh Ly whose telephone number is (571) 272-4039 or via E-Mail: ANH.LY@USPTO.GOV or fax to (571) 273-4039. The examiner can normally be reached on TUESDAY – THURSDAY from 8:30 AM – 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Breene, can be reached on (571) 272-4107 or Primary Examiner Jean Corrielus (571) 272-4032.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any response to this action should be mailed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231, or faxed to: Central Fax Center (703) 872-9306

ANH LY 
APR. 14th, 2005


JEAN M. CORRIELUS
PRIMARY EXAMINER